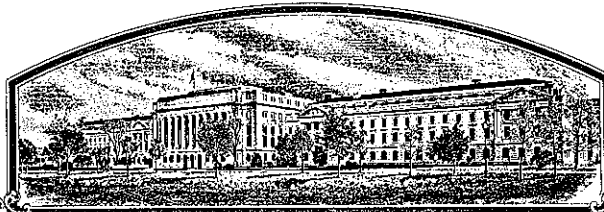


No.

8200163



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Ring Around Products, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (T. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'RA-403'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 27th day of October in the year of our Lord one thousand nine hundred and eighty-three.

Attest:

Leslie D. H. [Signature]
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION

FORM APPROVED: OMB NO.0581-0055

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

| | | | | | |
|--|--|---|--|--|--|
| 1. NAME OF APPLICANT(S) Zoecon Corporation Rohm and Haas Seeds Inc. <i>WJS 6/25/85</i> | | 2. TEMPORARY DESIGNATION RAX-47 | | 3. VARIETY NAME RA-403 <i>RJS 5/11/83</i> | |
| 4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) 975 California Avenue P.O. Box 10975 Palo Alto, California 94303 | | 5. PHONE (Include area code) 214-243-8166 | | FOR OFFICIAL USE ONLY PVPO NUMBER 8200163 | |
| 6. GENUS AND SPECIES NAME Glycine Max | | 7. FAMILY NAME (Botanical) Leguminosae | | FILING DATE <u>8/24/82</u> TIME <u>12:30</u> <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M. | |
| 8. KIND NAME Soybean | | 9. DATE OF DETERMINATION January 1982 | | FEES RECEIVED AMOUNT FOR FILING \$ <u>500</u> DATE <u>8/24/82</u> AMOUNT FOR CERTIFICATE \$ <u>250.00</u> DATE <u>10/6/83</u> | |
| 10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation | | | | 12. DATE OF INCORPORATION 26 March 1975 | |
| 11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware | | | | 13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Mike Haniford Ring Around Products, Inc. 12000 Ford Road, Suite 300 Dallas, Texas 75234 <i>DR. JAMES E. STROIKE</i> <i>727 NORRISTOWN ROAD, BUILDING 70</i> <i>SPRING HOUSE, PA 19477</i> <i>(214-243-8166)</i> | |
| 14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED | | | | | |
| a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.) | | c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.) | | | |
| b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement | | d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of the Variety | | | |
| 15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) <input type="checkbox"/> Yes (If "Yes," answer items 16 and 17 below) <input checked="" type="checkbox"/> No | | | | | |
| 16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> Yes <input type="checkbox"/> No | | 17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> Foundation <input type="checkbox"/> Registered <input type="checkbox"/> Certified | | | |
| 18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No | | | | | |
| 19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> Yes (If "Yes," give names of countries and dates) <input checked="" type="checkbox"/> No | | | | | |
| 20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties. | | | | | |
| SIGNATURE OF APPLICANT <i>WJS</i> ASSISTANT SECRETARY | | | | DATE <i>30-AUGUST-82</i> | |
| SIGNATURE OF APPLICANT | | | | DATE <div style="text-align: right;">1</div> | |

INSTRUCTIONS

General: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Department of Agriculture, Agricultural Marketing Service, Livestock, Meat, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

Item

- 9 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.
- 14a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.
- 14b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.
- 14c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.
- 14d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 15 If "Yes" is specified (*seed of this variety be sold by variety name only as a class of certified seed*) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "No," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)
- 16 See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

GPO 890-698

RECEIVED

SEP 7 1982



EXHIBIT A

Origin and Breeding History of the Variety

RA-403 originated from the cross SX-327 i.e..

$$SB128(b)4 \times \left[\frac{N70.1501 \times D72.8867A}{SB 117(a)} \right]_{F_1} - \left(\times \frac{\text{Mitchell}}{\text{Columbus}} \right)_{F_1}$$

SB128(b)4 was a single plant obtained from Missouri having high race 3 and race 4 cyst nematode resistance.

SB117(a)1 was single plant selected from the variety Clark, by Dr. Doug Owens at the Halfway Research Station, Halfway, Texas.

This cross was made in late 1975 in the greenhouse where the F_1 was also grown out in 1976. The F_2 population was advanced to the F_3 bulk was grown on race 4 cyst land near Millington, Tennessee for selection purposes.

SX-327(f)3T was a single plant selected from the F_3 bulk i.e. in 1978. This plant produced 28 grams of seed.

The line SX-327(f)3T was grown out in a 25' row in Prelim #41 at Schuffle Town Bottoms, Kentucky in 1979. Yield was equal to the check variety.

A small increase was made at Sebree, Ky. in 1980. Seed derived from this increase was used for 1981 testing and increase.

SX-327(f)3T was tested in two locations in 1980 i.e. Fisher, Arkansas and Plainview, Texas. Yield results are reported in lbs. per 400' blocks.

| | Arkansas | Texas |
|-------------|----------|-------|
| SX-327(f)3T | 21 | 70 |
| Mitchell | 26 | 76 |

Ph readings in Texas indicated SX-327-3 to have a 1.5 score vs. Mitchell at 4.5. Due to its excellent seed quality, high ph tolerance and good yield SX-327(f)3T was given an RAX-47 designation for testing in 1981.

RAX-47 was placed in trials in Plainview, Texas and Mascoutah, Illinois in 1981. Yield results were reported below:

| | Texas | Illinois |
|----------|-----------------|-----------------|
| RAX-47 | 67 lb <u>1/</u> | 9 lb. <u>2/</u> |
| Mitchell | 64 lbs. | 9 lb. |

1/ 4 rows x 100' plots
2/ 2 rows x 25' plots

Exhibit A
Continued

Also in 1981 an increase was made in Plainview, Texas. This small increase for breeders seed was rogued for off-types. A total of 835, 50 pound bags of clean seed was obtained for further testing and increase.

In January 1982 Ring Around Products decided to formally release RAX-47 as the new variety RA-403.

It will be recommended on irrigated areas of Texas, Oklahoma and Kansas where high ph is a problem. This four maturity variety will also be recommended in Missouri, Southern Illinois and Indiana where phytophthora root rot is not a problem.

RA-403 has occasional variant plants i.e. (1) those with tan pods with a frequency of .02%. A slightly taller white flowered plant occurs at .01%. These variants will be removed from breeders and foundation seed by Ring Around Products foundation seed deparyment. Otherwise, RA-403 is very uniform phenotypically during the growing season and a dark chocolate brown line at harvest time.

EXHIBIT B
Novelty Statement

RA-403 most nearly resembles the variety Mitchell in phenotype. It differs from Mitchell in 3 distinct traits.

1. RA-403 has brown pods and brown pubescence giving it a distinct dark chocolate brown color at maturity. Mitchell has tan pods and brown pubescence giving it a tawny appearance at maturity.
2. Mitchell has a brown hilum. RA-403 has a black hilum.
3. Mitchell is susceptible to high ph with a score of 4.5 in Plainview, Texas. RA-403 is tolerant to high ph with a 1.5 score in Plainview, Texas.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (*Glycine max* L.)

| | | |
|--|---------------------------------|---|
| NAME OF APPLICANT(S) Zoecon Corporation | TEMPORARY DESIGNATION RAX-47 | VARIETY NAME RA-403 |
| ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 975 California Avenue Palo Alto, California 94304 | | FOR OFFICIAL USE ONLY PVPO NUMBER 8200163 |

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,).

1. SEED SHAPE:

☒ 2 Rfs.


1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

☐ 1

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

☐ 2

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

☐ 17

Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

☐ 6

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

6. COTYLEDON COLOR: (Mature Seed)

☐ 1

1 = Yellow

2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

☐ 1

1 = Low

2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

☐ 1
1 = Type A (SP1^a)2 = Type B (SP1^b)

9. HYPOCOTYL COLOR:

☐ 4

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

☐ 3

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☐ 21 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

13. FLOWER COLOR:

☐ 2

1 = White

2 = Purple

3 = White with purple throat

14. POD COLOR:

☐ 2

1 = Tan

2 = Brown

3 = Black

15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

17. PLANT HABIT:

☐ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

☐ 0 ☐ 7

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)☐ 0Bacterial Blight (*Pseudomonas glycines*)☐ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)☐ 0

Race 1

☐

Race 2

☐

Race 3

☐

Race 4

☐

Race 5

☐

Other (Specify)

☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 0Powdery Mildew (*Microspheera diffusa*)☐ 0Brown Stem Rot (*Cephalosporium gregatum*)☐ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

FUNGAL DISEASES: (Continued)

☐ Pod and Stem Blight (*Diaporthe phaseolorum* var; *sojae*)
☐ Purple Seed Stain (*Cercospora kikuchii*)
☐ Rhizoctonia Root Rot (*Rhizoctonia solani*)
 Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
☒ Race 1 ☐ Race 2 ☐ Race 3 ☐ Race 4 ☐ Race 5 ☐ Race 6 ☐ Race 7
☐ Race 8 ☐ Race 9 ☐ Other (Specify) _____

VIRAL DISEASES:

☐ Bud Blight (Tobacco Ringspot Virus)
☐ Yellow Mosaic (Bean Yellow Mosaic Virus)
☐ Cowpea Mosaic (Cowpea Chlorotic Virus)
☐ Pod Mottle (Bean Pod Mottle Virus)
☐ Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)
☐ Race 1 ☐ Race 2 ☐ Race 3 ☐ Race 4 ☐ Other (Specify) _____
☐ Lance Nematode (*Hoplolaimus Colombus*)
☐ Southern Root Knot Nematode (*Meloidogyne incognita*)
☐ Northern Root Knot Nematode (*Meloidogyne Hapla*)
☐ Peanut Root Knot Nematode (*Meloidogyne arenaria*)
☐ Reniform Nematode (*Rotylenchulus reniformis*)
☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☒ Iron Chlorosis on Calcareous Soil
☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ Mexican Bean Beetle (*Epilachna varivestis*)
☐ Potato Leaf Hopper (*Empoasca fabae*)
☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|-------------|-----------------|-----------------------|-----------------|
| Plant Shape | Mitchell | Seed Coat Luster | Mitchell |
| Leaf Shape | Mitchell | Seed Size | Mitchell |
| Leaf Color | Columbus | Seed Shape | Mitchell |
| Leaf Size | Columbus | Seedling Pigmentation | Mitchell |
| | | | |

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

| VARIETY | NO. OF DAYS MATURITY | PLANT LODGING SCORE | CM PLANT HEIGHT | LEAFLET SIZE | | SEED CONTENT | | SEED SIZE G/100 SEEDS | NO. SEEDS/POD |
|-------------------------------------|----------------------|---------------------|-----------------|--------------|-----------|--------------|-------|-----------------------|---------------|
| | | | | CM Width | CM Length | % Protein | % Oil | | |
| Submitted | 112 | 1.5 | 96.5 | - | - | - | - | - | - |
| Mitchell Name of Similar Variety | 110 | 1.6 | 96.5 | - | - | - | - | - | - |

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

EXHIBIT D
Additional Description of the Variety

1983 Release

RA-403 Pedigree - SX-327-3=
Formerly RAX-47

$$\left[128 \left(\frac{N70-150 \times F72-8867A}{SB 117(a)1} \right) \times \left(\frac{Mitchell}{Columbus} \right) \right] F_1$$

This variety has purple flowers, brown pubescence and brown pods. Seed coat is yellow, hilum is black. Seed coat is hard and shiny. Emergence score is 1.0 (excellent), iron chlorosis tolerance was 1.5 (very good). Seed shatter score was 1.0; phytophthora root rot susceptible.

RA-403 is a unique chocolate brown color at harvest. Plant type is indeterminate, medium tall with good branching properties. RA-403 will be adapted to many areas presently growing Mitchell soybeans. Its high pH tolerance and shatter resistance will make it an ideal variety for western Kansas, Oklahoma and West Texas. It has better seed quality and less shatter than Mitchell which will allow it to be grown in areas where Mitchell yields well but gives trouble with seed quality and shatter.

It falls in Maturity Group IV - 2-4 days later than Mitchell.

RA-403 will be available as Certified and Registered seed in 1983.

ASSIGNMENT

PLANT VARIETY PROTECTION CERTIFICATE

WHEREAS, Ring Around Products, Inc., a Delaware corporation, having a place of business at 12200 Ford Road, Suite 400, Dallas, Texas 75234, hereinafter referred to as "Ring Around", is the duly authorized owner and holder of the entire right, title and interest in and to the following U.S. Plant Variety Protection Certificates and applications for U.S. Plant Variety Certificates (collectively referred to as "Certificates"):

Plant Protection Certificates and Applications

| <u>Variety</u> | <u>PVP Certificate No.</u> | <u>Date Issued</u> |
|----------------|----------------------------|------------------------|
| Mitchell | 7300054 | 10/30/74 |
| RA-526 | 7500067 | 12/12/75 |
| RA-501A | 76TQ006 | 5/11/78 |
| RA-401 | 7800030 | 6/22/78 |
| RA-601 | 7800031 | 6/22/78 |
| RA-480 | 7900007 | 2/15/79 |
| RA-604 | 7900008 | 3/1/79 |
| Mitchell 450 | 7900046 | 6/14/79 |
| RA-402 | 8000093 | 7/31/80 |
| RA-481 | 8000054 | 3/26/81 |
| RA-680 | 8100097 | 4/15/82 |
| RA-502 | 8200160 | 8/31/83 |
| RA-403 | 8200163 | 10/27/83 |
| Mitchell 410 | 8200162 | 10/27/83 |
| RA-606 | 8200161 | 10/27/83 |
| RA-580 | 8300075 | 4/30/84 |
| RA-405 | 8500010 (filing number) | 10/10/84 (filing date) |
| RA-451 | 8500008 (filing number) | 10/10/84 (filing date) |
| RA-452 | 8500009 (filing number) | 10/10/84 (filing date) |

WHEREAS, ROHM AND HAAS SEEDS INC., a Delaware corporation, ("RHS") having a place of business at Independence Mall West, Philadelphia, Pennsylvania 19105, is desirous of acquiring the entire interest in the aforementioned varieties, Certificates and the rights associated therewith;

NOW, THEREFORE, in consideration of and in exchange for the sum of one dollar (\$1.00) and other good and valuable consideration, receipt of which is hereby acknowledged, Ring Around does hereby sell, assign, transfer and set over, unto RHS its entire right, title and interest in and to the aforementioned varieties and Certificates.

IN WITNESS WHEREOF, this ASSIGNMENT is entered into as of
this 21st day of November, 1984.

RING AROUND PRODUCTS, INC.

By Wilbur G. Johnson
Wilbur G. Johnson
President

ACKNOWLEDGMENT

STATE OF PENNSYLVANIA)
)
COUNTY OF PHILADELPHIA)

On November 21, 1984, before me, the undersigned, a
Notary Public in and for said State and County, personally
appeared Wilbur G. Johnson, known to me to be the President of
the Corporation that executed the within instrument, on behalf of
the corporation herein named, and acknowledged to me that such
Corporation executed the within instrument pursuant to its
by-laws or a resolution of its board of directors.

WITNESS my hand and official seal.

Elizabeth A. Smith
Notary Public

My Commission Expires: Oct. 14, 1985

ELIZABETH A. SMITH
Notary Public, Phila., Phila. Co.
My Commission Expires Oct. 14, 1985

ASSIGNMENT

WHEREAS, Rohm and Haas Seeds Inc., a Delaware corporation, with its principal office at Independence Mall West, Philadelphia, Pennsylvania 19105 ("RHS") is the owner of the entire right, title and interest in and to the following soybean varieties, applications for United States Plant Variety Protection Certificates and United States Plant Variety Protection Certificates (collectively referred to as "Certificates"):

| <u>Soybean Variety</u> | <u>Certificate Number</u> | <u>Date Issued</u> |
|------------------------|---------------------------|--------------------|
| Mitchell | 7300054 | October 30, 1974 |
| RA-401 | 7800030 | June 22, 1978 |
| RA-601 | 7800031 | June 22, 1978 |
| Mitchell 450 | 7900046 | June 14, 1979 |
| RA-481 | 8000054 | March 26, 1981 |
| RA-402 | 8000093 | July 31, 1980 |
| Mitchell 410 | 8200162 | October 27, 1983 |
| RA-403 | 8200163 | October 27, 1983 |
| RA-526 | 7500067 | December 12, 1975 |
| RA-604 | 7900008 | March 1, 1979 |
| RA-680 | 8100097 | April 15, 1982 |
| RA-502 | 8200160 | August 31, 1983 |
| RA-606 | 8200161 | October 27, 1983 |
| RA-580 | 8300075 | April 30, 1984 |
| RA-501 A | 76TQ006 | May 11, 1978 |
| RA-480 | 7900007 | February 15, 1979 |

| <u>Soybean Variety</u> | <u>Application Number</u> | <u>Filing Date</u> |
|------------------------|---------------------------|--------------------|
| RA-451 | 8500008 | October 10, 1984 |
| RA-452 | 8500009 | October 10, 1984 |
| RA-405 | 8500010 | October 10, 1984 |

WHEREAS, CR Seeds, a general partnership, having its principal office at 900 Darlington Highway, Hartsville, South Carolina 29550 ("Partnership") is desirous of acquiring the entire interest in the aforementioned varieties and Certificates;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, RHM does hereby sell, assign, transfer to the Partnership the entire right, title and interest in and to the varieties and Certificates for its use and benefit and for its successors and assigns.

IN TESTIMONY THEREOF, Rohm and Haas Seeds Inc. intending to be legally bound has caused this assignment to be executed by its duly authorized officer, effective as of the 20th day of December, 1984.

Date:

12/23/85

ROHM AND HAAS SEEDS INC.

By:

Title:

Pres

STATE OF

Penna

:

COUNTY OF

Phila

:

SS

On this 23 day of December, 1985, before me appeared Charles H. Baker of Rohm and Haas Seeds Inc., the person who signed this instrument, who acknowledged that he signed it as a free act on behalf of Rohm and Haas Seeds Inc. with authority to do so.

Joan B. Henderson
JOAN B. HENDERSON Notary Public
Notary Public, Phila., Phila. Co.

My Commission Expires:

My Commission Expires Nov. 29, 1986

ASSIGNMENT

WHEREAS, CR Seeds, a general partnership having its principal office at 900 Darlington Highway, Hartsville, South Carolina 29550 ("Partnership"), is the owner of the entire right, title and interest to the United States Plant Variety Protection Certificates and applications for such Certificates (collectively "Certificates") listed on Appendix A attached hereto;

WHEREAS, the partners of CR Seeds, Rohm and Haas Seeds Inc., a Delaware corporation having its principal office at Independence Mall West, Philadelphia, PA 19105 ("RHS") and Coker's Pedigreed Seed Company, a South Carolina corporation with its principal office at 900 Darlington Highway, Hartsville, SC 29550 ("CPS"), are each desirous of acquiring a one-half undivided interest in the varieties and Certificates listed on Appendix A;

NOW, THEREFOR, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, CR Seeds does hereby sell, assign and transfer to RHS a one-half undivided interest in and to the varieties and Certificates and to CPS a one-half undivided interest in and to the varieties and Certificates for each of their use and benefit and for each of their successors and assigns.

IN TESTIMONY THEREOF, CR Seeds intending to be legally bound has caused this assignment to be executed by its duly authorized officer.

CR Seeds

By: E. Joe Dahmer
President

State of South Carolina)
County of Darlington) SS

On this 30th day of December, 1986, before me appeared E. Joe Dahmer of CR Seeds, the person who signed this instrument who acknowledged that he signed it as a free act on behalf of CR Seeds with authority to do so.

Logan B. Elliott
Notary Public

My commission expires 4-14-91

APPENDIX A

Soft Red Winter Wheat Varieties

| <u>Variety Name</u> | <u>U.S. Plant Variety Certificate No.</u> | <u>Issue Date</u> |
|-------------------------|---|----------------------------|
| Coker 68-15 | 7200014 | Mar. 6, 1974 |
| Coker 68-19 | 7200015 | Mar. 6, 1974 |
| Coker 747 | 76TQ015 | Sept. 9, 1978 |
| Coker 762 | 8000152 | Dec. 12, 1981 |
| Coker 797 | 8000145 | Dec. 12, 1981 |
| Coker 916 | 8300036 | Sept. 27, 1985 |
| Coker 983 | 8400058 ¹ | Feb. 27, 1984 ¹ |
| McNair 701 | 7200038 | Feb. 26, 1974 |
| McNair 4823 | 7200037 | April 8, 1975 |
| RHS 8232 | 8400136 ¹ | July 16, 1984 ¹ |
| 9227 | 8600009 ¹ | Oct. 22, 1985 ¹ |
| 9323 | 8600010 ¹ | Oct. 22, 1985 ¹ |

1. Application number and filing date.

Winter Oat Varieties

| <u>Variety Name</u> | <u>U.S. Plant Variety Certificate No.</u> | <u>Issue Date</u> |
|-------------------------|---|----------------------------|
| Coker 227 | 7500007 | Oct. 20, 1977 |
| Coker 716 | 7900003 | Dec. 28, 1978 |
| Coker 820 | 8400059 ¹ | Feb. 28, 1984 ¹ |
| Coker 234 | 7500008 | Oct. 26, 1977 |
| Four Twenty Two | 7700085 | Apr. 12, 1979 |
| Big Mac | 8200121 | Aug. 19, 1982 |
| Mesquite | 8200122 | Aug. 19, 1982 |

1. Application number and filing date.

Soybean Varieties

| | | |
|--------------------------|----------------------|---------------------------|
| Coker Hampton 266A | 7100022 | Sept. 6, 1973 |
| Coker 136 | 7300091 | Oct. 18, 1973 |
| Coker 338 | 7400058 | Oct. 29, 1976 |
| Coker 237 | 7800034 | July 13, 1978 |
| Coker 488 | 7800035 | July 13, 1978 |
| Coker 156 | 7900043 | Nov. 27, 1979 |
| Coker 317 | 8100095 | Nov. 19, 1981 |
| Coker 368 | 8200140 | Aug. 31, 1983 |
| Coker 425 | 8400077 | May 31, 1985 |
| Coker 485 | 8400078 | May 31, 1985 |
| Coker 393 (Q327-4270) | 8400018 | Jan. 25, 1985 |
| Coker 355 (XP5878) | 8400019 | Jan. 25, 1985 |
| Coker 627 | 8700001 ¹ | Oct. 3, 1986 ¹ |
| Coker 686 | Pending ¹ | Dec. 19, 1986 |

1. Application number and filing date.

| <u>Variety Name</u> | <u>U.S. Plant Variety Certificate No.</u> | <u>Issue Date</u> |
|-------------------------|---|-------------------|
| AP55 | 8100089 | Feb. 18, 1982 |
| AP70 | 7800081 | Feb. 15, 1979 |
| AP71 | 8100090 | Sept. 24, 1981 |
| Lancer | 7600044 | Sept. 29, 1976 |
| RA-526 | 7500067 | Dec. 12, 1975 |
| RA-604 | 7900008 | Mar. 1, 1975 |
| RA-680 | 8100097 | Apr. 15, 1982 |
| RA-502 | 8200160 | Aug. 31, 1983 |
| RA-606 | 8200161 | Oct. 27, 1983 |
| RA-580 | 8300075 | Apr. 30, 1984 |
| Mitchell | 7300054 | Oct. 30, 1974 |
| RA-401 | 7800030 | June 22, 1978 |
| RA-601 | 7800031 | June 22, 1978 |
| Mitchell 450 | 7900046 | June 14, 1979 |
| RA-481 | 8000054 | Mar. 26, 1981 |
| RA-402 | 8000093 | July 31, 1981 |
| Mitchell 410 | 8200162 | Oct. 27, 1983 |
| RA-403 | 8200163 | Oct. 27, 1983 |

| <u>Variety Name</u> | <u>Certificate No.</u> | <u>Issue Date</u> |
|-------------------------|------------------------|----------------------------|
| RA-451 | 8500008 ¹ | Oct. 10, 1984 ¹ |
| RA-452 | 8500009 ¹ | Oct. 10, 1984 ¹ |
| RA-405 | 8500010 ¹ | Oct. 10, 1984 ¹ |
| RA-501 A | 76TQ006 | May 11, 1978 |
| RA-480 | 7900007 | Feb. 15, 1979 |

1. Application number and filing date.

ASSIGNMENT

WHEREAS, Rohm and Haas Seeds Inc., a Delaware corporation having its principal office at Independence Mall West, Philadelphia, PA 19105 ("RHS"), is the owner of a one-half undivided interest in and to the United States Plant Variety Protection Certificates and applications for such Certificates (collectively "Certificates") listed on Appendix A attached hereto:

WHEREAS, Coker's Pedigreed Seed Company, a South Carolina corporation with its principal office at 900 Darlington Highway, Hartsville, SC 29550 ("CPS"), is desirous of acquiring this one-half undivided interest in the aforementioned varieties and Certificates;

NOW, THEREFOR, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, RHS does hereby sell, assign and transfer to CPS RHS's one-half undivided interest in and to the varieties and Certificates for CPS's use and benefit and for its successors and assigns.

IN TESTIMONY THEREOF, RHS intending to be legally bound has caused this assignment to be executed by its duly authorized officer.

ROHM AND HAAS SEEDS INC.

By: Howard A. Mergelkamp
Assistant Treasurer

State of Pennsylvania)
County of Philadelphia) SS

On this 31st day of December, 1986, before me appeared Howard A. Mergelkamp of Rohm and Haas Seeds Inc., the person who signed this instrument who acknowledged that he signed it as a free act on behalf of Rohm and Haas Seeds Inc. with authority to do so.

Elizabeth A. Smith
Notary Public

ELIZABETH A. SMITH
Notary Public, Phila. Phila. Co
My Commission Expires Oct. 14, 1989

My commission expires _____.

8200163

ASSIGNMENT OF PLANT VARIETY PROTECTION CERTIFICATES

WHEREAS, COKER'S PEDIGREED SEED COMPANY, a South Carolina corporation ("Coker's"), having its offices at 900 Darlington Highway, Hartsville, South Carolina 29550, has adopted and used and is the sole and exclusive owner of certain United States Plant Variety Protection Certificates and similar rights under laws of countries other than the United States as listed in Exhibit A hereto:


WHEREAS, COKER'S PEDIGREED SEED CO. and NORTHRUP KING CO., a Delaware corporation ("NK"), have entered into an Asset Purchase Agreement, dated July 20, 1988, providing for the purchase and sale of substantially all of the assets and business of Coker's and the assumption of certain of Coker's liabilities and obligations by NK; and

WHEREAS, NK desires to acquire the right, title and interest in, to and under the Plant Variety Protection Certificates listed on Exhibit A hereto and the pending applications hereto (collectively, the "Plant Variety Protection Certificates").

IN WITNESS WHEREOF, Coker's has caused this instrument to be executed by its duly authorized representative as of the 20th day of July, 1988.

By: E. Joe Dahmer
E. Joe Dahmer
President

On this 26th day of July, 1988, before me, a Notary Public in and for the County aforesaid, the undersigned officer, E. Joe Dahmer, personally appeared and acknowledged himself to be the President of Coker's Pedigreed Seed Co., and that he executed the foregoing instrument for the purposes therein.

 **TIMOTHY M. BANGASSER**
NOTARY PUBLIC — MINNESOTA
HENNEPIN COUNTY
My Commission Expires May 22, 1992

Timothy M. Bagnasser
Notary Public

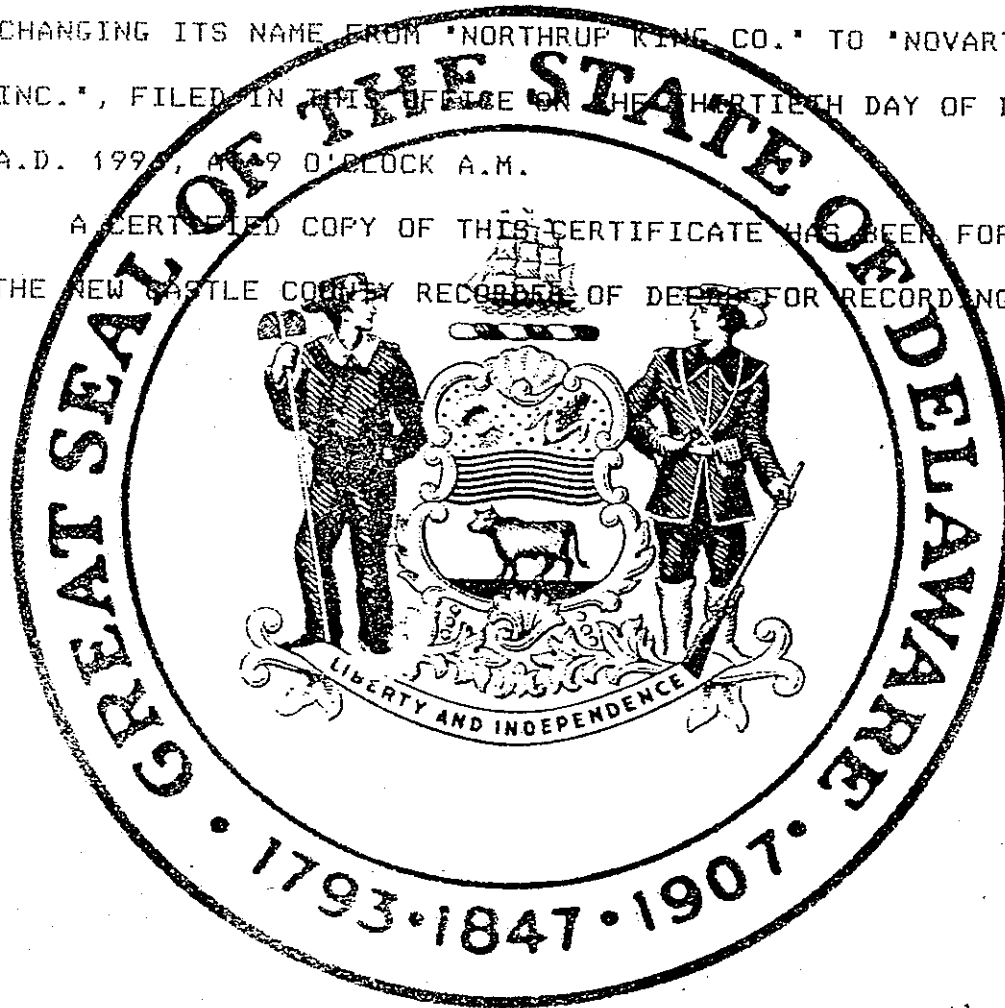
Soybean Varieties, Continued

| <u>Variety Name</u> | <u>U.S. Plant Variety Certificate Number</u> | <u>Issue Date</u> | <u>Term (Yrs.)</u> |
|---------------------|--|-------------------|--------------------|
| AP55 | 8100089 | Feb. 18, 1982 | 18 |
| AP70 | 7800081 | Feb. 15, 1979 | 17 |
| AP71 | 8100090 | Sept. 24, 1981 | 18 |
| Lancer | 7600044 | Sept. 29, 1976 | 17 |
| RA-526 | 7500067 | Dec. 12, 1975 | 17 |
| RA-604 | 7900008 | Mar. 1, 1975 | 17 |
| RA-680 | 8100097 | Apr. 15, 1982 | 18 |
| RA-502 | 8200160 | Aug. 31, 1983 | 18 |
| RA-606 | 8200161 | Oct. 27, 1983 | 18 |
| RA-580 | 8300075 | Apr. 30, 1984 | 18 |
| Mitchell | 7300054 | Oct. 30, 1974 | 17 |
| Ra-401 | 7800030 | June 22, 1978 | 17 |
| RA-601 | 7800031 | June 22, 1978 | 17 |
| Mitchell 450 | 7900046 | June 14, 1979 | 17 |
| RA-481 | 8000054 | Mar. 26, 1981 | 18 |
| RA-402 | 8000093 | July 31, 1980 | 17 |
| Mitchell 410 | 8200162 | Oct. 27, 1983 | 18 |
| RA-403 | 8200163 | Oct. 27, 1983 | 18 |
| RA-451 | 8500008 | Dec. 27, 1985 | 18 |
| RA-452 | 8500009 | Aug. 30, 1985 | 18 |
| RA-405 | 8500010 | Aug. 30, 1985 | 18 |
| RA-501A | 76T0006 | May 11, 1978 | 17 |
| RA-480 | 7900007 | Feb. 15, 1979 | 17 |

Office of the Secretary of State

I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "NORTHROP KING CO.", CHANGING ITS NAME FROM "NORTHROP KING CO." TO "NOVARTIS SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF DECEMBER, A.D. 1996, AT 9 O'CLOCK A.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



Edward J. Freel, Secretary of State

0829320 8100

960389892

AUTHENTICATION:

8267947

DATE:

12-31-96

CERTIFICATE OF AMENDMENT OF CERTIFICATE OF INCORPORATION
OF
NORTHROP KING CO.

It is certified that:

1. The name of the corporation (hereinafter called the "Corporation") is Northrup King Co.

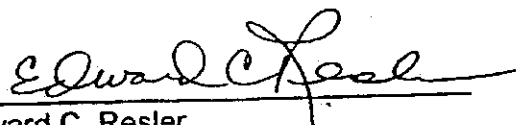
2. The Certificate of Incorporation of the Corporation is hereby amended by striking out Section 1 thereof and by substituting in lieu of said Section the following new Section.

1. The name of the Corporation is Novartis Seeds, Inc.

3. The amendment of the certificate of incorporation herein certified has been duly adopted and written consent has been given in accordance with the provisions of Sections 228 and 242 of the General Corporation Law of the State of Delaware.

4. The effective date of the amendment herein certified shall be January 1, 1997.

Signed on December 27, 1996.


Edward C. Resler
Vice President & Secretary